

BAB X

PERHITUNGAN SLOOF S2

10.1 Perencanaan Sloof S2

- Beban momen lentur

$$L_s := 6 - 0.30 = 5.7 \text{ m}$$

$$\text{Dimensi sloof : } b := 200 \text{ mm}$$

$$h := 400 \text{ mm}$$

$$\text{Beban mati tembok } W_t := 250 \cdot 3.50 = 875 \text{ kg/m'}$$

$$\text{Berat sendiri sloof } W_s := 0.20 \cdot 0.40 \cdot 2400 = 192 \text{ kg/m'}$$

$$q_{tot} := W_t + W_s = 1067 \text{ kg/m'}$$

$$q_u := 1.2 \cdot q_{tot} = 1280.4 \text{ kg/m'}$$

Momen berfaktor Mu :

$$M_u := \frac{q_u \cdot L_s^2}{10 \cdot 100} = 41.6 \text{ kNm}$$

- Beban aksial (10% Pkolom)

$$P_{kolom} := 259.429 \text{ kN}$$

$$P_s := 0.1 \cdot P_{kolom} = 25.943 \text{ kN}$$

Direncanakan menggunakan :

tulangan utama 3D13 (two face) dan tulangan tengah 2D13

senggang $\Phi 8$

$$d_{aksen} := 40 + 8 + 6.5 = 54.5 \text{ mm}$$

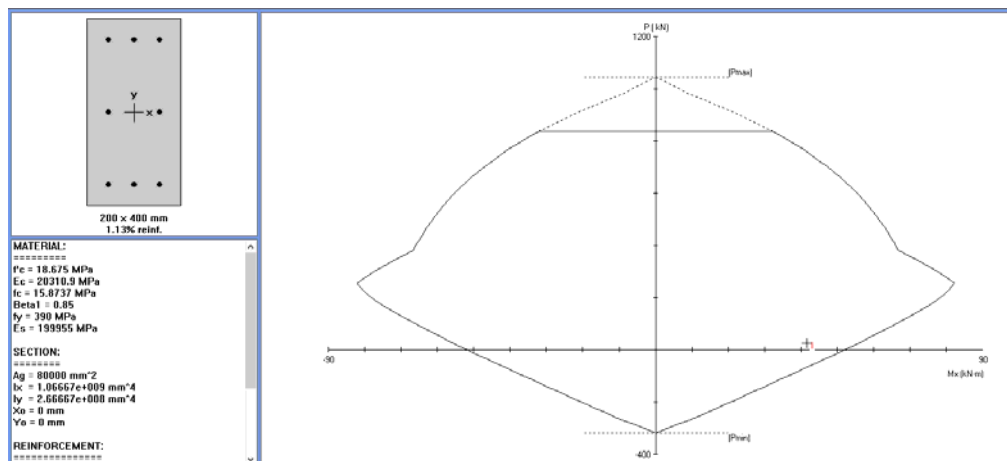
$$d := h - d_{aksen} = 345.5 \text{ mm}$$

$$f_y := 390 \text{ Mpa}$$

$$f_c := 18.675 \text{ Mpa}$$

$$E_s := 200000 \text{ Mpa}$$

Kontrol menggunakan PCA COL



- Tulangan Geser Sloof

$N_u := 25.943 \text{ kN}$ (Output SAP)

kuat geser komponen struktur yang dibebani aksial tekan

$$A_g := 200 \cdot 400 = 80000 \text{ mm}^2$$

$$V_c := \left(1 + \frac{N_u \cdot 1000}{A_g} \right) \cdot \frac{\sqrt{f_c} \cdot b \cdot d}{6 \cdot 1000} = 65.908 \text{ kN} \quad (\text{SNI 03-2847-200 Ps. 13.3.1.2})$$

$$V_u := \frac{q_u \cdot L_s}{2 \cdot 100} = 36.491 \text{ kN}$$

$$V_s := \frac{V_u}{0.6} - V_c = -5.089 \text{ kN}$$

karena gaya geser beton mampu menahan gaya geser yang bekerja maka cukup dipasang tulangan geser $\Phi 8-150$ pada daerah tumpuan & $\Phi 8-200$ pada daerah lapangan.